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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Yoshiaki Shimizu

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EXAMINER

LAZORCIK, JASON L

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/743,383	Applicant(s) SHIMIZU, YOSHIAKI	
	Examiner Jason L. Lazorcik	Art Unit 1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 through 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation that the plural groups are, respectively "controllable" with respect to a gas flow rate in lines 6-7. The claim does not explicitly state that the flow rate of the gas through the plural groups is controllable. Rather, the claim construction as currently recited presents alternative and equally valid claim interpretations which render the particular metes and bounds of Applicants claimed invention unclear and indefinite.

Specifically, Examiner does not contest the validity of Applicants claim interpretation wherein flow rate of a gas is the parameter under control (e.g. rate of flow of the gas through the plural groups). However, the claim only requires that the group be broadly "controllable". Therefore the claim may be alternately and validly interpreted in a manner such that a characteristic of the plural groups (e.g. position, temperature, etc.), not the flow rate of gas there through, is altered or "controlled" in response to or "with respect to" a change in the gas flow rate. As a hypothetical example of the latter interpretation, the relative spacing of the plural groups may be "controllable" in response to a measured change of the gas flow rate. Taken collectively, the variable

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interpretations of Applicants claim render the particular metes and bounds of Applicants claimed invention indefinite.

It is strongly suggested that Applicant amend the instant claim to better clarify that it is the flow rate of the gas through the pipes which is controlled and not a property of the plural groups. Applicants specification provides several passages which incorporated into the identified claim would resolve the indefinite bounds of the said claim.

"the supporting gas is passed there through in a manner as to be controllable in every group" – Pg 6, lines 11-16

"gas sources connected to the hollow body and the plural groups through the gas feed lines at the other ends thereof, respectively, wherein each gas feed line has a control means for controlling a flow rate of a gas to be passed there through". Pg 6, line 20 to pg 7, line 2

Finally although not at issue here, it is advised that Applicant carefully consider the consistency of terms in the present claim construction. Specifically, Claim 1 recites three apparently different gases; "a flammable gas" in line 4, "a supporting gas" in line 4, and "a gas flow rate" in line 6. As currently set forth, it is not clear whether the flammable gas and/or the supporting gas, or neither of these is intended as the antecedent for the claimed "a gas flow rate". As such, the claim has been afforded the broadest reasonable interpretation.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1,2,3, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimizu (US 6,386,001 B1).

With respect to Claims 1, 2, 3, the immediate reference teaches (Column 1, Lines 49-56, and Figure 30) a method for processing a glass preform which includes supporting said preform (106) on a glass working lathe (111) between a stationary chuck (114) and a movable chuck (116). Said lathe is provided with a burner (122) with flow rate control units which provide “flame controlled conditions (Column 32, Lines 1-5, and Column 31, Lines 14-28) by controlling the rate of gas flow of both a combustible gas and oxygen gas or “a supporting gas”. The lathe with burner is understood to process said preform under the flame controlled conditions provided by the burner.

Figures 44 and 45 display the detailed structure of the lathe burner. Figure 44 reveals that at least one group of discharge pipes (286) discharge the supporting gas, “O2”, from a common oxygen gas channel (308). The discharge pipes are arranged within a hollow cylinder or hollow body (285) which is open at the end proximal to the lead line 294 and closed at the end distal thereto. The flammable gas, H2, is understood to flow through the hollow body from the combustible gas channel (312). The reference discloses (Column 31, Lines 46-48) that the distribution pipes are placed or grouped around the center of the outside pipe in a plurality of rows of concentric

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circles or “arranged within the hollow body (285) from a center towards an outer periphery”. Since the groups thus defined share a common central axis, the groups are considered to be co-axial. Therefore, each concentric circle of distribution pipes is understood to constitute one group (see dashed circles on annotated Fig 45 below) of the claimed co-axially classified plural groups. Taken collectively, these co-axially classified groups constitute the claimed “at least one group of discharge pipes”.

As depicted in Figure 45, all the co-axially classified groups are supplied with support gas through the single oxygen gas channel (308) and the flow through said channel is controlled by an oxygen gas flow rate control unit (310). Since the flow rate of the H₂ or “a gas” in the combustible gas channel (312) is separately controlled by the combustible gas flow rate control unit (314), gas flow through the plural groups of coaxially classified discharge pipes is understood to be controllable with respect to a gas flow rate. Since the gas flow from the oxygen channel through ALL of the discharge pipes is controllable with the oxygen gas flow rate control unit, it is understood that the supporting gas is passed there through in a manner as to be controllable in EVERY group.

Regarding claim 6, The prior art teaches that the heating power condition of the flame can be adjusted based on a diameter of the end-drawn region of the glass rod (Column 5, Lines 29-36) and that “the amount of gas supplied to the heating source (122) is set based on the measured diameter (Column 18, Lines 55-57).

With respect to Claim 7, prior art teaches that “the generation of a (gas) pulse caused by the opening and closing of the valve (300) can be prevented by setting a

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different linear speed value for the oxygen gas at the time of opening and closing of the valve (300)" (Column 33, lines 36-41). Where a gas pulse is understood as a "stepwise" change in the gas flow rate and the indicated prevention of the pulse results in a "gradual" change in gas flow rate, the immediate claim limitation "wherein the flow rates of the gases are changeable in a stepwise manner or gradually" is anticipated by prior art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu (US 6,386,001 B1) as applied in the rejection of Claim 1 under 35 USC 102(b) above and in further view of Nabors (US 5,554,022). Shimizu teaches two separate configurations of discharge tubes (286) inside the hollow body (285) in figures 44 and 45. Specifically, Figure 44 depicts a case wherein the plural groups number 2 (e.g. 1

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central tube and 1 circle of peripheral tubes) while Figure 45 depicts a structure wherein the plural groups number 5 (1 central tube and 4 concentric rings of tubes). Gitman fails to explicitly indicate that the number of plural groups should be three (as set forth in claim 4) or four (as set forth in claim 5). Nabors teaches a burner design which utilizes controllable oxidant channels to control the flow pattern of oxygen in a fuel combustion process (abstract, Column 1, Lines 10-27). The immediate reference further teaches that variations in the oxidizer flow path enables optimization of thermal efficiencies of the flame (Column 1, Lines 24-27) as well as affecting the shape of the resulting flame (Figs 7, 8). Since it was known that the flow pattern of oxygen in a flame is critical to the efficiency and shape of the resulting flame, it would have been obvious to one of ordinary skill in the art seeking to optimize the heating process in the Gitman process to optimize the number of plural groups of distributing tubes in the burner used therein. Specifically, since the number of distribution tubes would reasonably be expected to affect the oxygen flow pattern in the burner flame and Gitman has taught the use of both 2 and 5 plural groups of distribution tubes, it would be an obvious extension over prior art to utilize 3 or 4 plural groups of tubes in the effort to optimize said oxidant flow pattern.

Response to Arguments

Applicant's arguments filed March 16, 2007 have been fully considered but they are not persuasive.

Applicant argues that Shimizu teaches control over each of the hydrogen and oxygen supply flow rates, but it does not teach “respective control of groups of pipes discharging the supporting gas”. Specifically, it is argues that “Shimizu does not teach respective control of plural groups of the supporting gas” and that “it is unclear as to the basis for the contention that there is respective control of the gas flow rate for the plural groups”.

In response, it is the Examiners position first that the term “respectively” controllable is not equivalent to nor does it imply “independent” or “separate” control over an event or a element. Specifically, the claim recites the limitation that “plural groups...are, respectively, controllable with respect to a gas flow rate,” in lines 5 and 6. Notwithstanding the identified deficiencies under 35 USC §112, second paragraph, when looking to an accepted definition of the term “respectively”, we find that said term is commonly used to indicate “(of two or more things, with reference to two or more things previously mentioned) referring or applying to in a parallel or sequential way” *Random House Unabridged Dictionary, © Random House, Inc. 2006*. Of particular importance here is that the term “respectively” provides for the scenario wherein two or more of the identified “plural groups” are controlled in a parallel (read “simultaneous”) way.

Therefore, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., independent or separate control over each group of pipes of the identified plural groups of pipes) are not sufficiently recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the

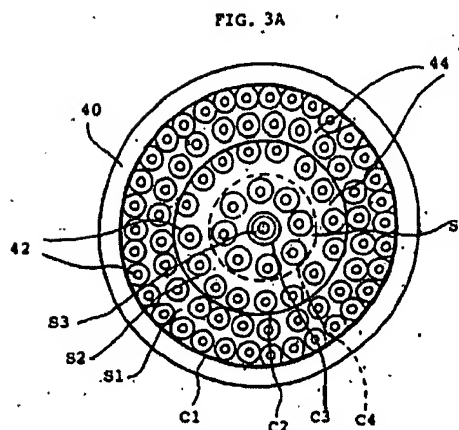
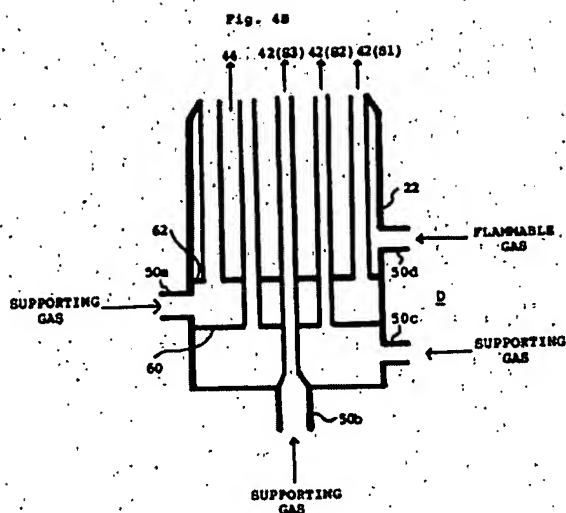
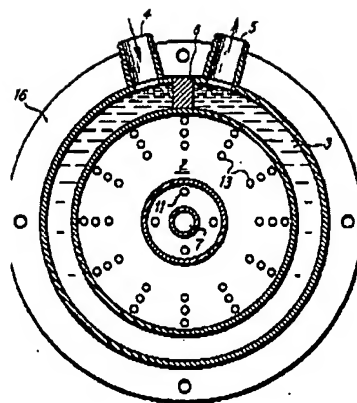
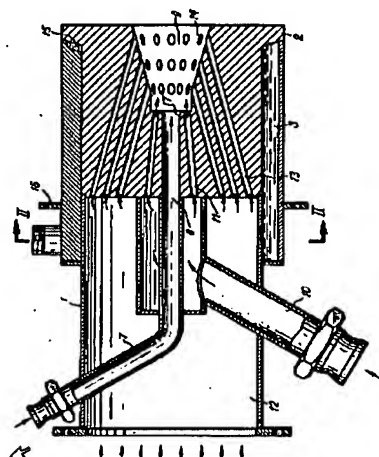
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specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gitman (US 4,622,007) teaches a burner configuration wherein multiple concentric groups of controllable oxidant channels distribute oxidant to a fuel in a combustion process.

Although not necessary in the above rejection, the following excerpt images (Fig 1, top left, and Fig. 2, top right) from Gitman are provided to underscore the fact that burners presenting "at least one group of discharge pipes co-axially classified into plural groups" similar to applicants burner structures Figure 3A and Figure 4B (Bottom left and bottom right, respectively) have been well established through analogous prior art teachings. More specifically, it will be well appreciated from a reading of the Gitman reference (Figs 5, 6 and column 4, line 11 to Column 6, line 32) that it is known to provide independent control over the flow rate of combustible and carrier gases through each of these plural groups in order to control the nature of combustion in the resulting burner flame. Gitman would have provided an obvious approach to optimizing the economical operation (see Column 1, lines 33-50) of the burner unit in the Shimizu process.



THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLL


STEVEN P. GRIFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

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